

PYONGTAEK KO

Latitude = 36.97 N

Longitude = 127.03 E

Period of Record = 1967 to 1996

WMO No. 471270

Elevation = 52 feet

Average Pressure = 29.93 inches Hg

Design Criteria Data

	Design Value	Mean Coincident (Average) Values			
		Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Dry Bulb Temperature (T)	(°F)				
Median of Extreme Highs	93	80	137	6.6	W
0.4% Occurrence	91	79	133	6.5	W
1.0% Occurrence	88	78	128	6.8	W
2.0% Occurrence	86	76	123	6.7	W
Mean Daily Range	18	-	-	-	-
97.5% Occurrence	16	14	9	3.3	NW
99.0% Occurrence	10	8	6	2.2	N
99.6% Occurrence	5	4	5	1.7	E
Median of Extreme Lows	1	0	4	0.9	E
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Wet Bulb Temperature (T_{wb})	(°F)				
Median of Extreme Highs	83	90	157	6.6	W
0.4% Occurrence	81	88	147	6.7	W
1.0% Occurrence	79	85	139	6.0	W
2.0% Occurrence	78	84	135	5.7	W
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Humidity Ratio (HR)	(gr/lb)				
Median of Extreme Highs	169	87	1.12	7.5	WNW
0.4% Occurrence	151	86	0.99	5.4	W
1.0% Occurrence	142	83	0.94	5.1	W
2.0% Occurrence	135	81	0.88	6.2	SW
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		16	699	943	1884

Other Site Data

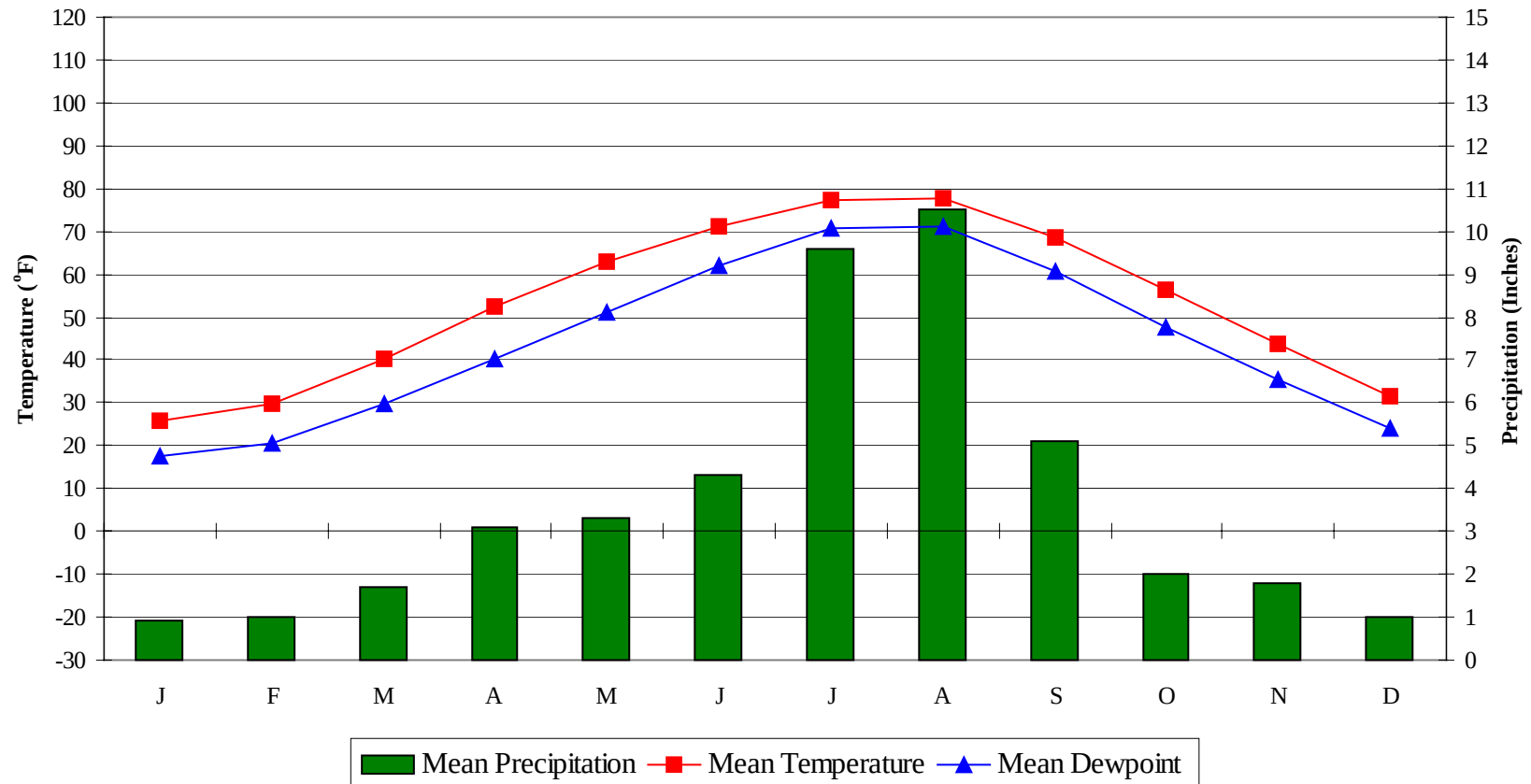
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
7	N/A	N/A	3.1 + 0.7
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
55.9	N/A	N/A	74

*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

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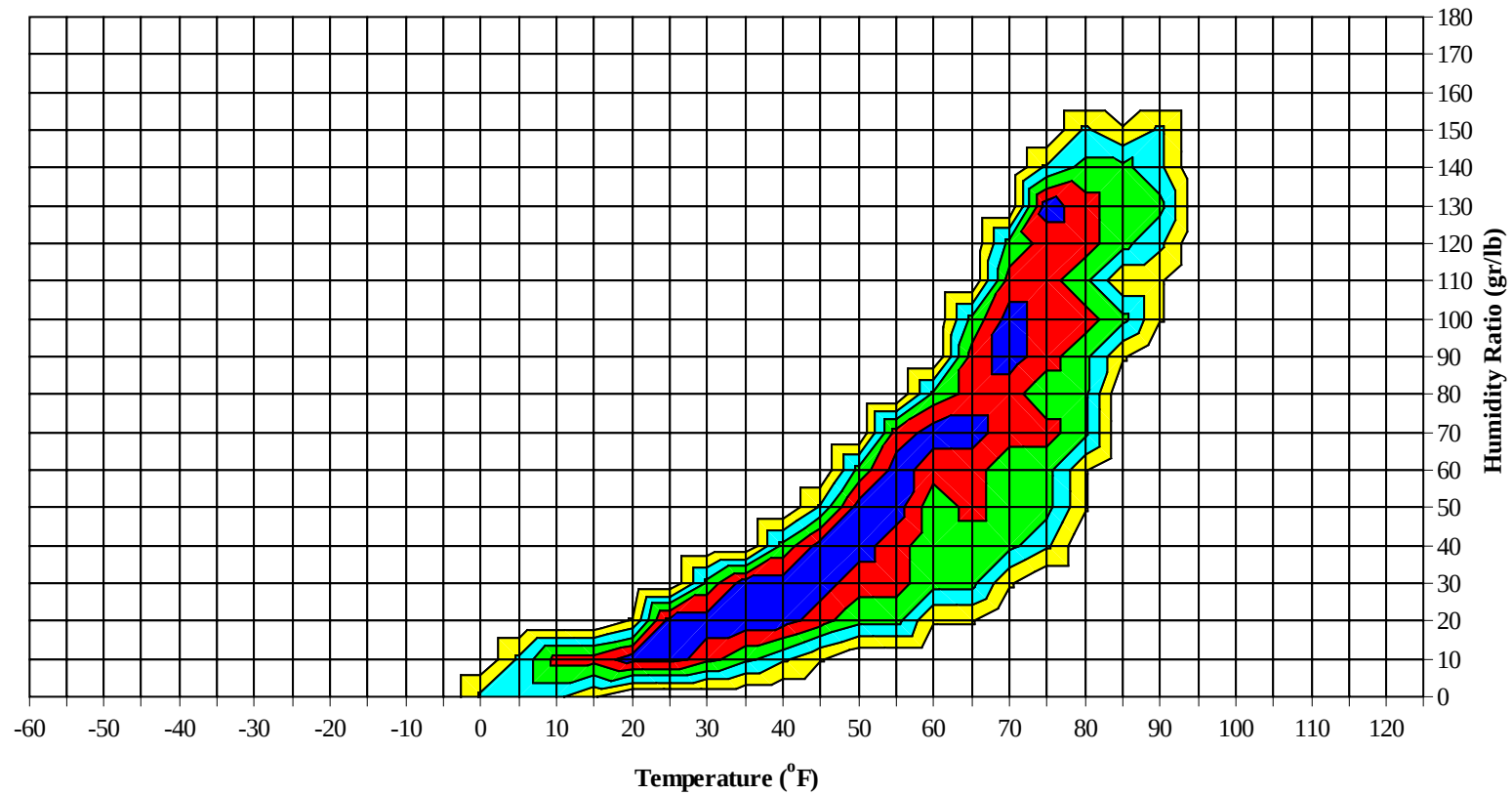
Average Annual Climate



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Long Term Psychrometric Summary

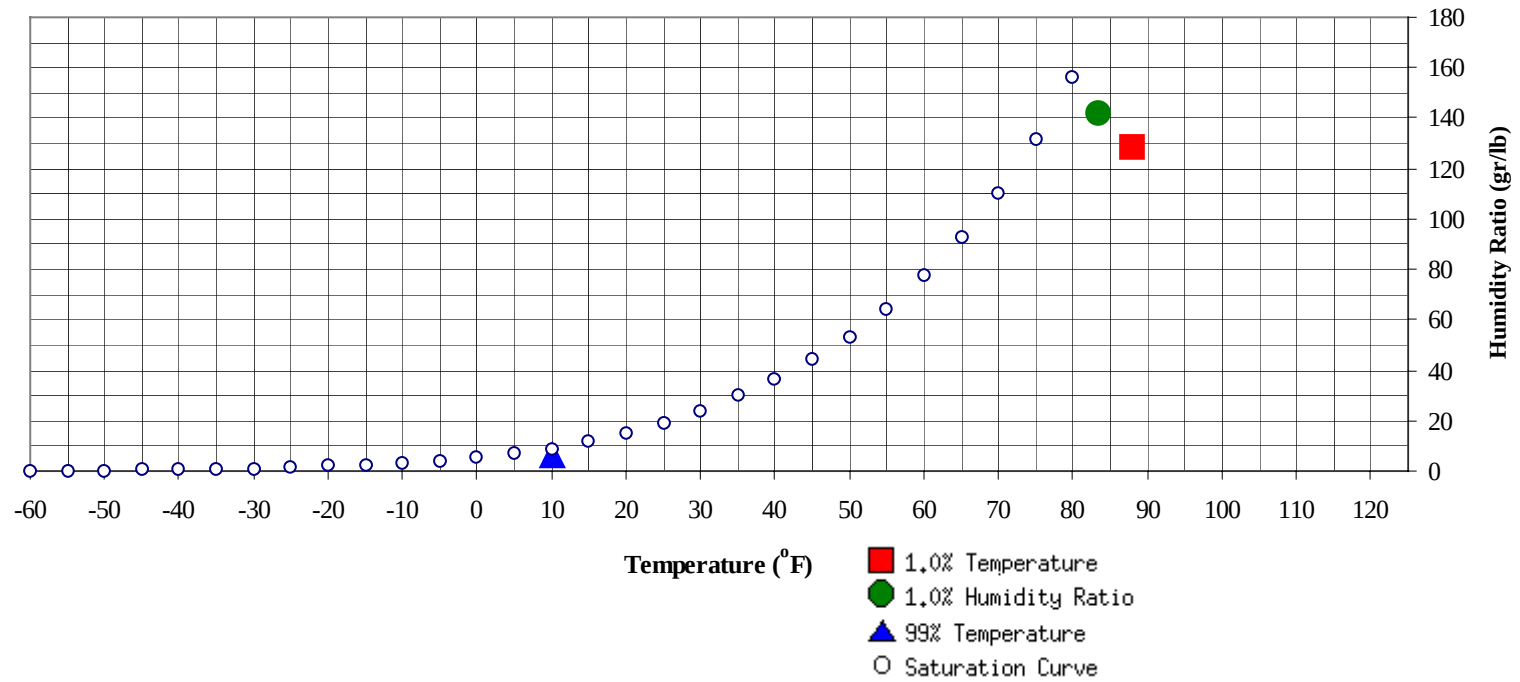


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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Psychrometric Summary of Peak Design Values



	(°F)	MCHR	Enthalpy	1.0% Humidity Ratio	(gr/lb)	MCDB	MCWB	MC Dewpt	Enthalpy
		(gr/lb)	(btu/lb)			(°F)	(°F)	(°F)	(btu/lb)
99% Dry Bulb	10	6.4	3.4	Ratio	142.1	83.3	78.7	77	42.3

1.0% Dry Bulb	(°F)	MCHR	MCWB	Enthalpy
		(gr/lb)	(°F)	(btu/lb)
88	128.2	77.8	41.3	

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Dry-Bulb Temperature Hours For An Average Year (Sheet 1 of 5)

Period of Record = 1967 to 1996

Temperature Range (°F)	January					February					March				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
95 / 99															
90 / 94															
85 / 89															
80 / 84															
75 / 79															
70 / 74												0		0	56.2
65 / 69												1	0	1	53.3
60 / 64							1	0	1	52.7		11	2	13	50.3
55 / 59		0		0	45.6	0	3	1	4	49.2	0	24	9	33	47.0
50 / 54		2	0	2	44.0	1	8	3	12	44.3	3	43	21	68	44.1
45 / 49	1	10	3	15	40.1	3	23	11	37	40.4	13	61	49	123	41.1
40 / 44	3	19	9	31	37.4	4	24	14	42	37.0	22	39	45	106	38.1
35 / 39	16	51	37	103	33.9	20	56	43	119	33.5	66	46	68	180	34.3
30 / 34	31	55	55	142	29.2	35	46	54	136	29.1	78	20	42	140	29.8
25 / 29	44	49	60	153	24.1	49	34	53	136	24.2	52	4	11	67	25.1
20 / 24	32	26	32	90	19.8	32	16	18	66	19.9	11	0	0	11	20.7
15 / 19	52	21	33	106	16.0	42	10	18	69	16.1	3	0	0	3	16.7
10 / 14	35	9	11	56	10.8	22	3	7	32	10.8	0			0	11.0
5 / 9	16	3	5	24	6.1	11	1	1	13	6.1					
0 / 4	10	2	2	14	0.8	3	0	0	3	1.2					
-5 / -1	4	1	0	5	-3.2	1	0		1	-3.2					
-10 / -6	2	0	0	2	-7.4	0	0		0	-5.8					
-15 / -11	1	0	0	1	-11.7										
-20 / -16	0	0		0	-15.3										

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

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Dry-Bulb Temperature Hours For An Average Year (Sheet 2 of 5)

Period of Record = 1967 to 1996

Temperature Range (°F)	April					May					June				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
95 / 99												0	0	0	67.3
90 / 94												2	0	2	72.1
85 / 89		0		0	63.5		1	0	1	64.8		7	2	9	70.8
80 / 84		1	0	1	61.8		15	4	19	65.0	0	53	20	73	69.7
75 / 79		7	2	9	60.9		44	18	62	63.0	5	79	52	136	68.2
70 / 74	0	23	7	29	57.7	3	61	36	100	60.6	43	65	85	193	66.3
65 / 69	1	26	11	38	55.2	9	43	36	88	59.1	73	23	50	147	63.9
60 / 64	5	53	30	88	52.7	54	50	74	178	57.2	91	11	27	128	60.5
55 / 59	17	52	49	118	50.2	80	27	54	161	53.5	24	1	3	28	55.9
50 / 54	39	46	55	140	47.0	68	6	23	98	49.6	3	0	0	3	50.7
45 / 49	59	24	52	136	42.9	30		3	33	44.8	0			0	46.6
40 / 44	45	6	20	71	39.2	4			4	40.7					
35 / 39	53	2	12	67	35.3	0			0	37.5					
30 / 34	19	0	1	20	30.8										
25 / 29	2			2	26.5										
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															

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Dry-Bulb Temperature Hours For An Average Year (Sheet 3 of 5)

Period of Record = 1967 to 1996

Temperature Range (°F)	July					August					September				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
95 / 99		2	1	3	80.6		1	0	1	80.7					
90 / 94		21	7	28	79.6		29	9	38	79.3		0	0	0	77.6
85 / 89		39	17	56	77.9		50	20	70	77.6		5	1	6	74.9
80 / 84	10	81	58	149	75.3	9	88	57	154	75.4	0	38	11	49	71.2
75 / 79	86	69	88	242	73.4	92	53	96	241	73.6	6	76	33	116	68.5
70 / 74	104	31	67	202	69.6	100	22	58	180	69.7	30	71	67	167	66.3
65 / 69	36	4	10	51	65.4	34	4	8	46	65.3	44	29	49	122	63.9
60 / 64	10	1	1	12	61.2	12	0	1	13	61.5	80	17	56	152	60.4
55 / 59	1	0		1	56.3	1			1	55.7	45	4	19	68	55.3
50 / 54											28	0	4	32	51.0
45 / 49											6		0	6	46.4
40 / 44											1			1	41.7
35 / 39											0			0	36.3
30 / 34															
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															

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Dry-Bulb Temperature Hours For An Average Year (Sheet 4 of 5)

Period of Record = 1967 to 1996

Temperature Range (°F)	October					November					December				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
95 / 99															
90 / 94															
85 / 89															
80 / 84		1	0	1	65.9										
75 / 79		13	2	15	63.4										
70 / 74	0	47	12	59	60.6		2	0	2	59.5					
65 / 69	1	41	17	59	58.5		5	1	6	56.4					
60 / 64	18	64	55	136	56.8	0	26	7	32	54.4		1	0	1	52.8
55 / 59	42	41	69	152	53.2	7	38	21	66	51.1	0	5	1	6	49.6
50 / 54	63	25	49	137	49.2	21	47	39	107	47.2	1	14	6	21	46.0
45 / 49	61	11	27	99	44.6	35	46	54	135	42.8	6	30	17	53	41.8
40 / 44	28	4	10	41	40.3	30	25	32	87	38.9	12	27	18	57	38.3
35 / 39	25	2	6	32	36.1	53	30	46	129	34.8	33	60	57	149	34.3
30 / 34	9	0	1	10	31.4	47	15	27	89	30.2	46	46	57	148	29.6
25 / 29	1			1	27.4	35	5	11	51	25.4	55	36	49	140	24.7
20 / 24						8	1	2	11	20.6	30	14	20	65	20.4
15 / 19						4	0	0	4	17.3	38	11	18	66	16.4
10 / 14						0	0		0	11.3	18	3	6	27	11.0
5 / 9											6	1	1	8	6.2
0 / 4											3	0	0	3	1.0
-5 / -1											0			0	-2.3
-10 / -6											0			0	-6.7
-15 / -11															
-20 / -16															

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Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1967 to 1996

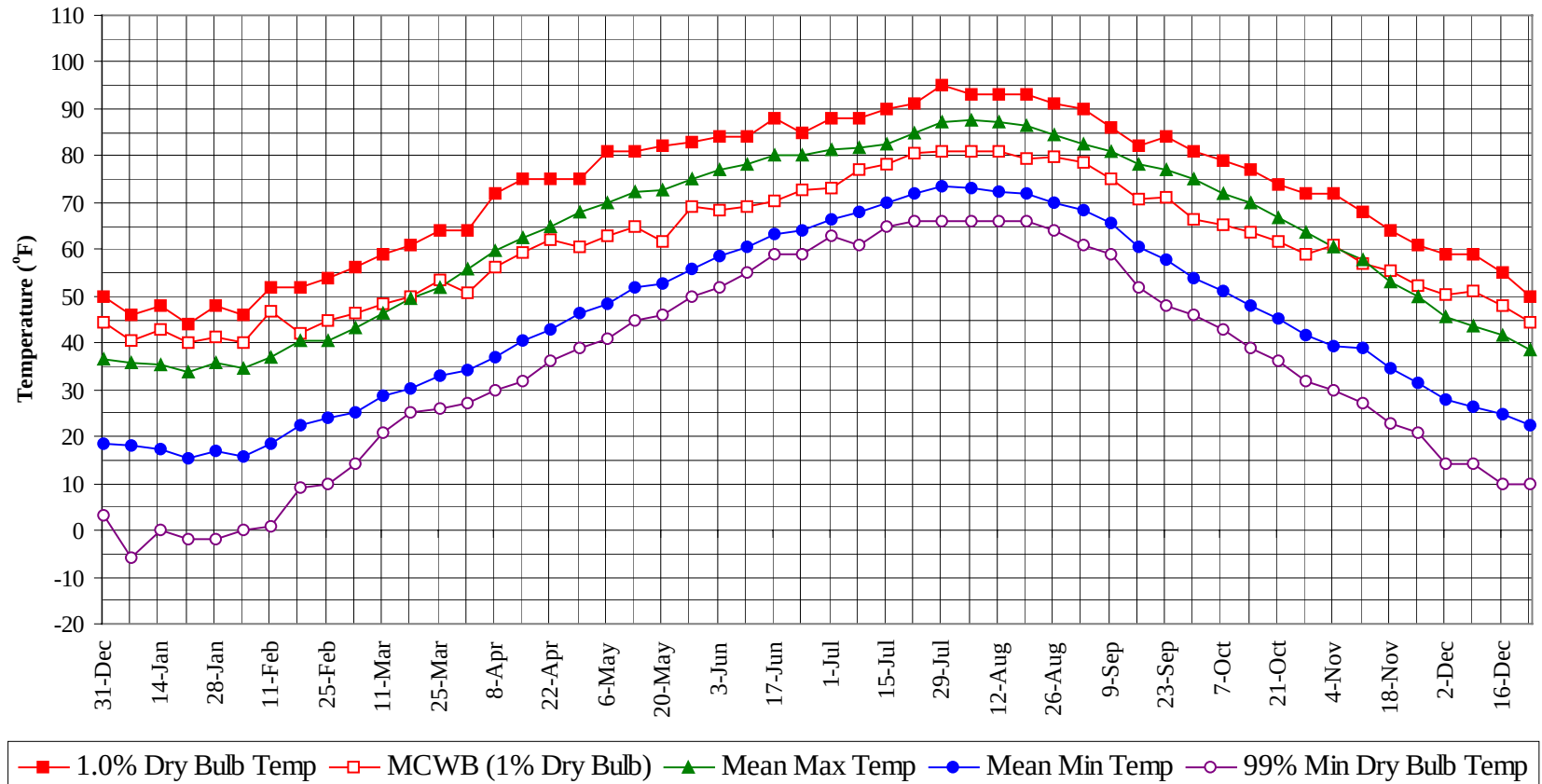
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
95 / 99		4	1	5	80.3
90 / 94		52	16	68	79.2
85 / 89		102	39	141	77.0
80 / 84	21	277	152	450	73.4
75 / 79	190	342	295	827	70.7
70 / 74	283	321	336	939	66.3
65 / 69	201	179	183	563	62.0
60 / 64	272	237	255	764	57.6
55 / 59	218	195	227	640	52.4
50 / 54	228	192	202	622	47.7
45 / 49	216	204	217	637	42.6
40 / 44	147	143	147	437	38.5
35 / 39	264	244	266	774	34.4
30 / 34	262	181	232	674	29.6
25 / 29	236	128	180	544	24.5
20 / 24	114	56	70	241	20.1
15 / 19	137	41	68	247	16.2
10 / 14	75	15	23	114	10.9
5 / 9	32	5	7	44	6.1
0 / 4	17	2	2	21	0.9
-5 / -1	4	1	0	5	-3.1
-10 / -6	2	0	0	2	-7.3
-15 / -11	1	0	0	1	-11.7
-20 / -16	0	0		0	-15.3

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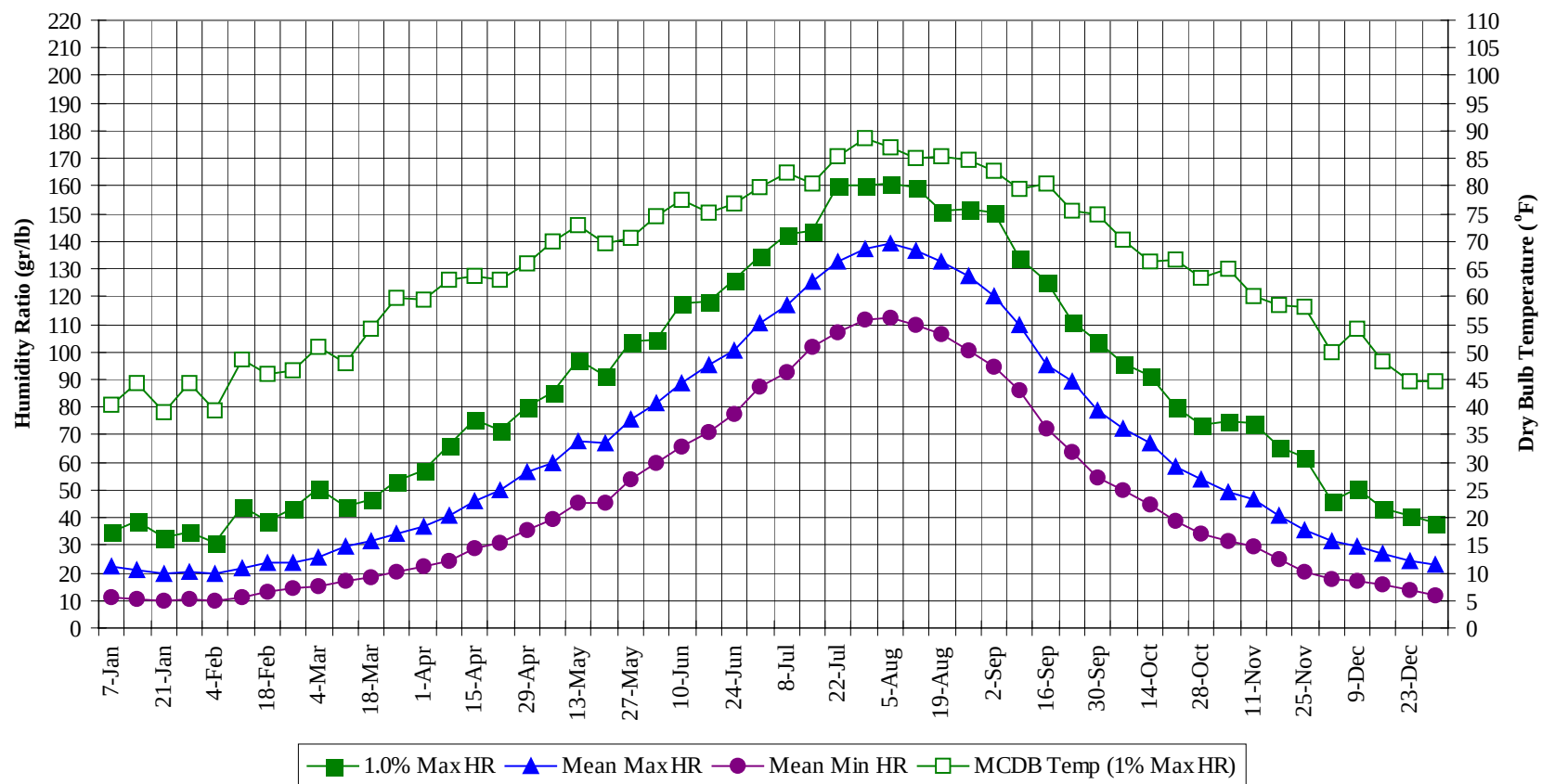
PYONGTAEK KO

WMO No. 471270

Annual Summary of Temperatures

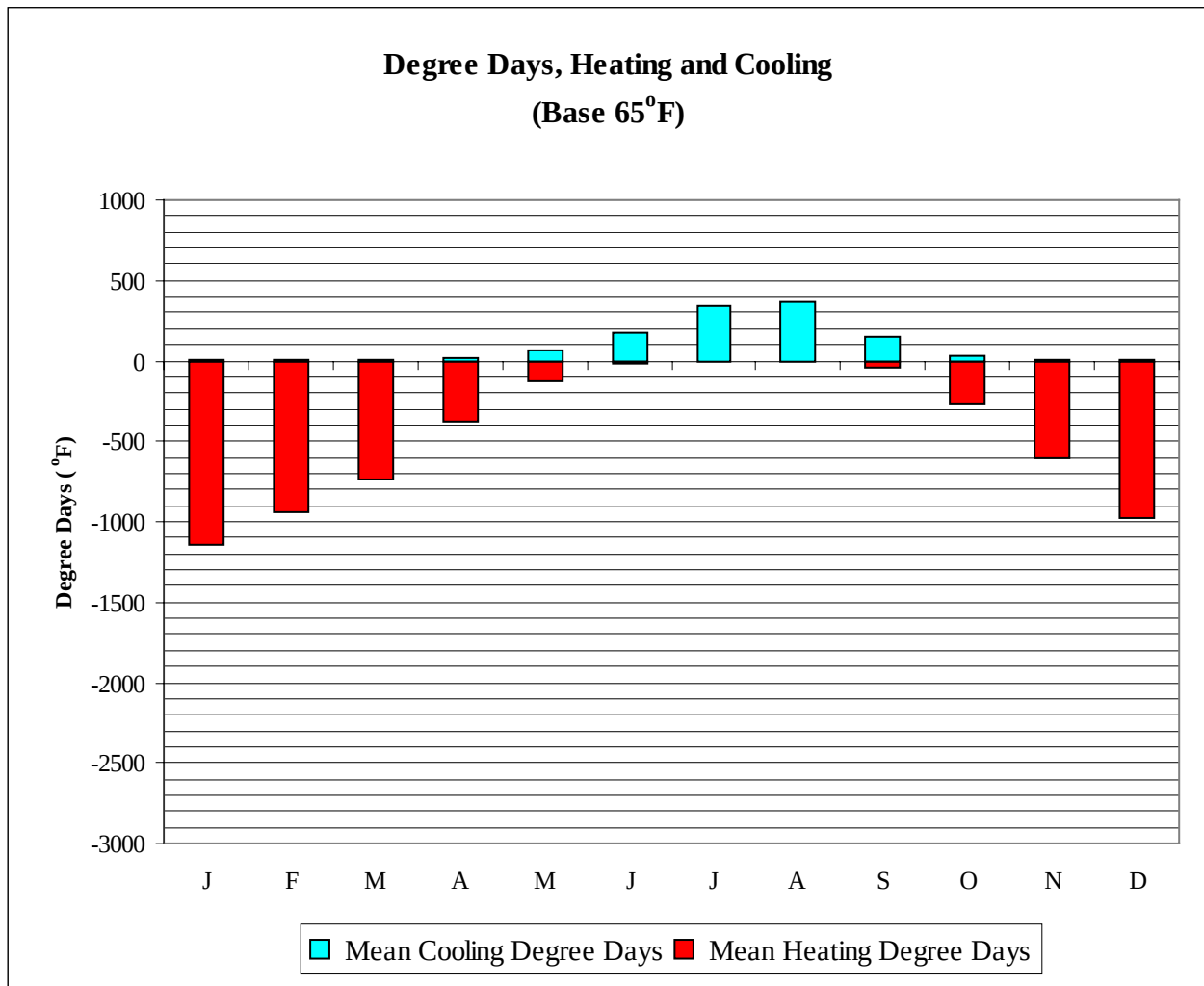


Long Term Humidity and Dry Bulb Temperature Summary



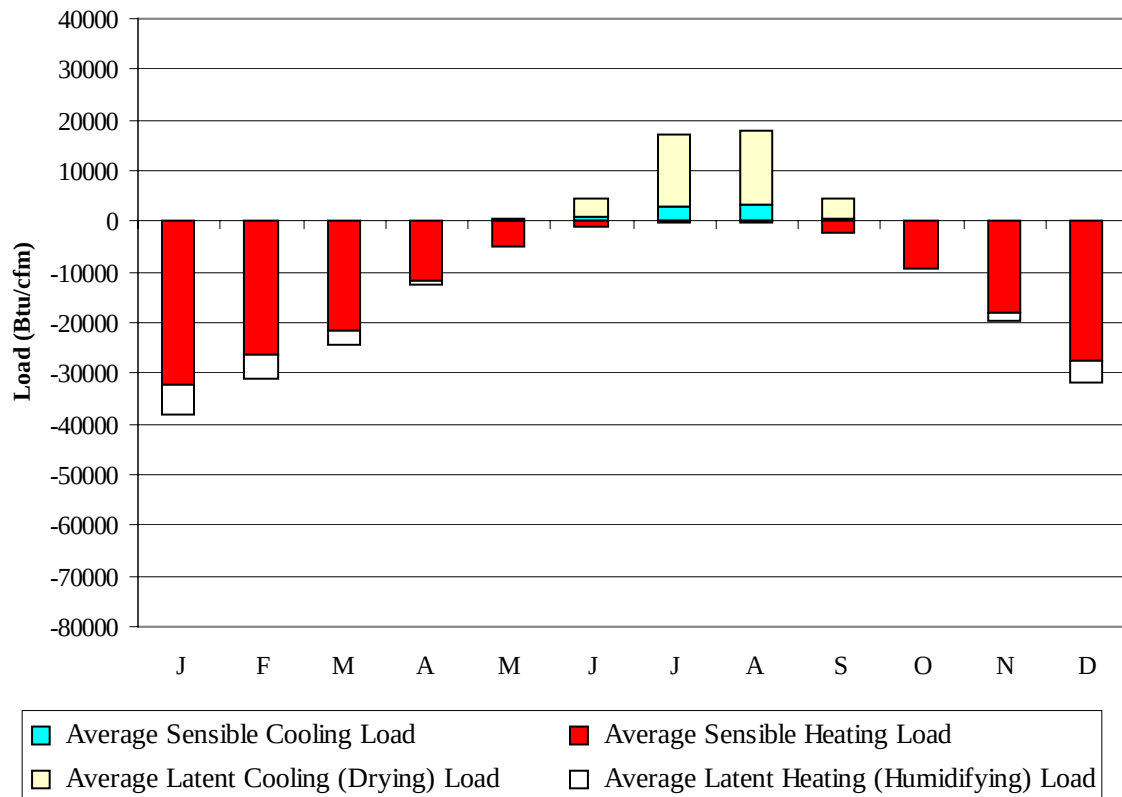
PYONGTAEK**KO****WMO No. 471270****Long Term Dry Bulb Temperature and Humidity Summary**

Week Ending	1.0% Temp (°F)	MCWB @ 1% Temp (°F)	Mean Max Temp (°F)	Mean Min Temp (°F)	99% Temp (°F)	1.0% HR (gr/lb)	MCDB @ 1% HR (°F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	46.0	40.5	35.7	18.1	-6.0	35.0	40.4	22.1	11.4
14-Jan	48.0	42.7	35.2	17.3	0.0	38.5	44.3	20.7	10.7
21-Jan	44.0	40.0	33.8	15.5	-2.0	32.9	39.0	19.5	9.5
28-Jan	48.0	41.3	35.7	16.9	-2.0	35.0	44.4	20.4	10.6
4-Feb	46.0	40.1	34.5	15.8	0.0	30.8	39.4	19.8	9.8
11-Feb	52.0	46.9	36.9	18.3	1.0	44.1	48.7	21.6	11.5
18-Feb	52.0	42.1	40.3	22.5	9.0	38.5	45.8	23.9	13.3
25-Feb	54.0	44.8	40.4	24.0	10.0	43.4	46.6	23.9	14.2
4-Mar	56.0	46.3	43.1	25.1	14.0	50.4	50.8	25.9	14.8
11-Mar	59.0	48.2	46.3	28.8	21.0	44.1	47.8	29.3	17.2
18-Mar	61.0	49.7	49.5	30.4	25.0	46.9	54.2	31.6	18.5
25-Mar	64.0	53.4	52.0	32.8	26.0	53.2	59.9	34.1	20.5
1-Apr	64.0	50.7	55.8	34.3	27.0	57.4	59.3	36.5	22.1
8-Apr	72.0	56.3	59.8	37.1	30.0	66.5	62.9	40.6	24.3
15-Apr	75.0	59.5	62.5	40.5	32.0	75.6	63.8	45.8	29.1
22-Apr	75.0	62.0	64.7	42.7	36.0	71.4	63.1	50.2	30.9
29-Apr	75.0	60.6	67.9	46.2	39.0	79.8	65.9	56.8	35.6
6-May	81.0	63.0	69.8	48.5	41.0	85.4	69.9	59.8	39.6
13-May	81.0	64.8	72.3	52.0	45.0	97.3	73.0	67.4	45.2
20-May	82.0	61.7	72.7	52.5	46.0	91.0	69.6	67.2	45.5
27-May	83.0	69.2	75.1	55.9	50.0	103.6	70.5	75.5	53.6
3-Jun	84.0	68.3	76.8	58.4	52.0	104.3	74.6	81.5	59.9
10-Jun	84.0	69.2	78.2	60.5	55.0	117.6	77.4	88.9	65.9
17-Jun	88.0	70.3	80.3	63.1	59.0	118.3	75.2	95.3	71.0
24-Jun	85.0	72.8	80.0	64.2	59.0	126.0	76.7	100.5	77.6
1-Jul	88.0	72.9	81.4	66.5	63.0	134.4	79.6	110.2	87.5
8-Jul	88.0	77.2	81.8	68.0	61.0	142.8	82.4	116.8	92.8
15-Jul	90.0	78.2	82.5	70.0	65.0	143.5	80.5	125.6	101.7
22-Jul	91.0	80.4	84.9	71.8	66.0	160.3	85.3	133.0	107.3
29-Jul	95.0	81.0	87.2	73.5	66.0	160.3	88.7	137.5	111.9
5-Aug	93.0	81.1	87.5	73.2	66.0	161.0	87.1	139.3	112.4
12-Aug	93.0	80.8	87.2	72.3	66.0	159.6	85.1	136.5	109.6
19-Aug	93.0	79.4	86.6	71.8	66.0	151.2	85.2	132.8	106.2
26-Aug	91.0	79.6	84.3	70.1	64.0	151.9	84.9	127.5	100.4
2-Sep	90.0	78.6	82.4	68.3	61.0	150.5	82.9	120.2	94.8
9-Sep	86.0	74.9	80.8	65.6	59.0	133.7	79.6	109.6	85.7
16-Sep	82.0	70.7	78.1	60.7	52.0	125.3	80.3	95.3	72.0
23-Sep	84.0	71.2	77.1	58.0	48.0	111.3	75.4	89.4	63.8
30-Sep	81.0	66.3	74.9	53.9	46.0	103.6	74.8	78.7	54.8
7-Oct	79.0	65.1	71.9	51.3	43.0	95.9	70.2	72.1	49.9
14-Oct	77.0	63.5	70.0	48.1	39.0	91.0	66.3	67.2	44.4
21-Oct	74.0	61.7	66.9	45.4	36.0	79.8	66.5	58.6	38.6
28-Oct	72.0	58.8	63.6	41.7	32.0	73.5	63.5	53.7	34.0
4-Nov	72.0	61.0	60.5	39.5	30.0	74.9	65.0	49.5	31.2
11-Nov	68.0	57.1	57.6	38.9	27.0	74.2	60.2	46.9	29.4
18-Nov	64.0	55.4	53.1	34.8	23.0	65.8	58.6	40.4	25.2
25-Nov	61.0	52.2	50.0	31.4	21.0	61.6	58.0	35.5	20.6
2-Dec	59.0	50.1	45.6	28.0	14.0	46.2	49.8	31.5	18.0
9-Dec	59.0	51.0	43.7	26.2	14.0	50.4	54.0	29.8	16.8
16-Dec	55.0	47.9	41.5	24.6	10.0	43.4	48.2	27.2	15.6
23-Dec	50.0	44.5	38.7	22.3	10.0	40.6	44.5	24.4	13.5
31-Dec	50.0	44.6	36.5	18.7	3.0	37.8	44.7	22.7	11.7



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1149
FEB	0	936
MAR	0	741
APR	14	372
MAY	71	131
JUN	178	18
JUL	343	1
AUG	365	1
SEP	145	47
OCT	25	274
NOV	1	610
DEC	0	977
ANN	1140	5257

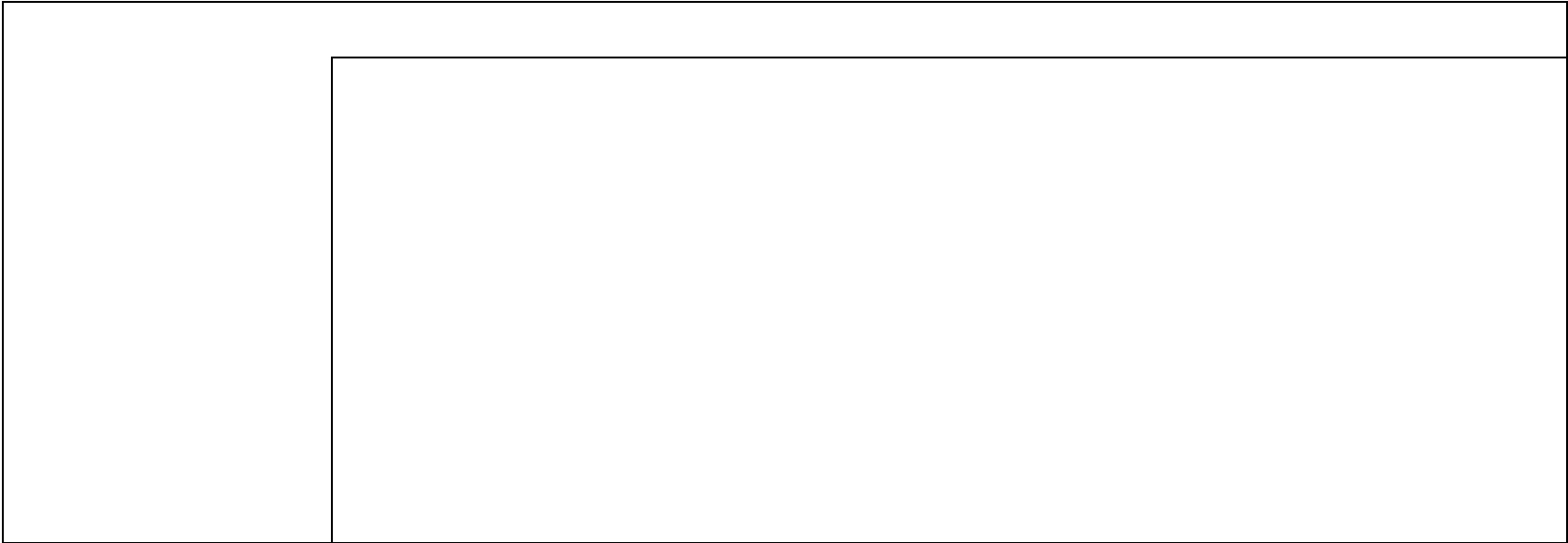
Average Ventilation and Infiltration Loads
(Outside Air vs. 75°F, 60% RH summer; 68°F, 30% RH winter)



	Average Sensible Cooling Load	Average Sensible Heating Load	Average Latent Cooling Load	Average Latent Heating Load
	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)
JAN	0	-32160	0	-5909
FEB	0	-26420	0	-4736
MAR	0	-21666	0	-2659
APR	19	-11898	7	-727
MAY	232	-5036	297	-25
JUN	864	-1063	3651	0
JUL	2848	-112	14160	0
AUG	3281	-97	14725	0
SEP	620	-2114	3658	-1
OCT	29	-9206	115	-200
NOV	0	-18079	3	-1660
DEC	0	-27636	0	-4369
ANN	7893	-155487	36616	-20286

Average Annual Solar Radiation – Nearest Available Site
(Source: National Renewable Energy Laboratory, Golden CO, 1995)

No Solar Radiation
Data Available

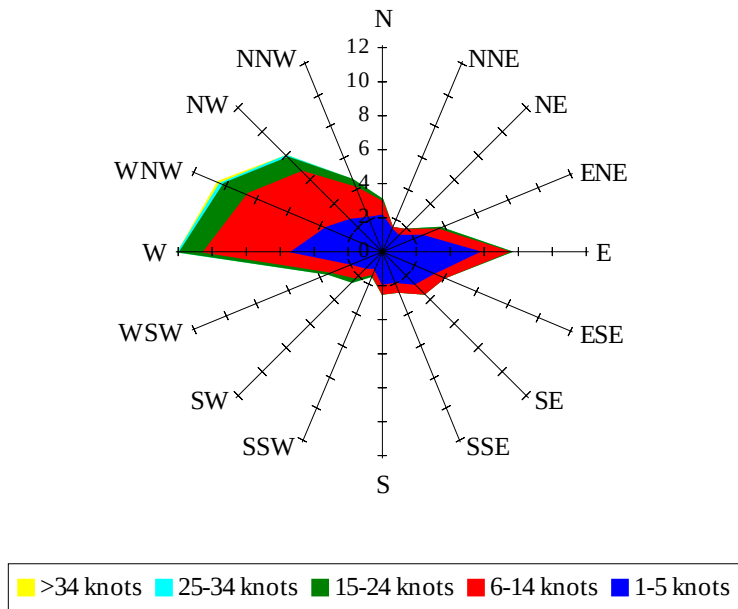


Average Annual Solar Heat and Illumination – Nearest Available Site

(Source: National Renewable Energy Laboratory, Golden CO, 1995)

Wind Summary - December, January, and February

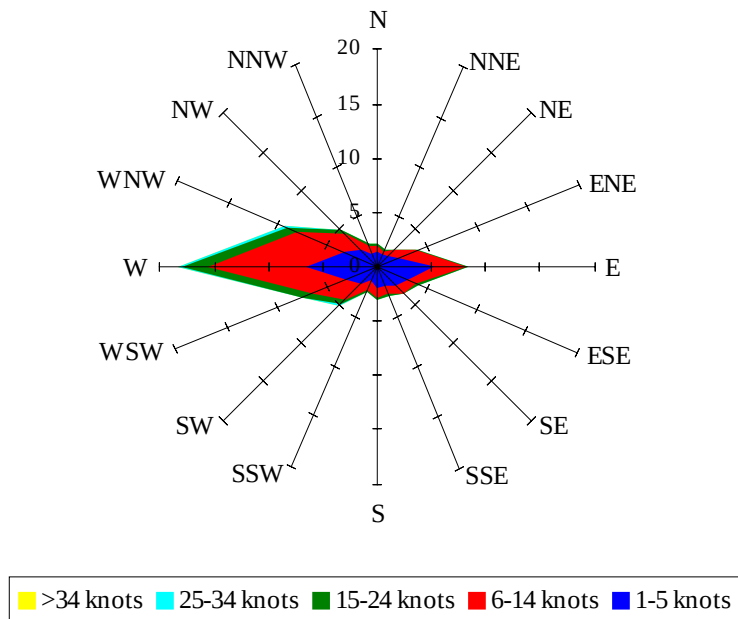
Labels of Percent Frequency on North Axis



Percent Calm = 28.15

Wind Summary - March, April, and May

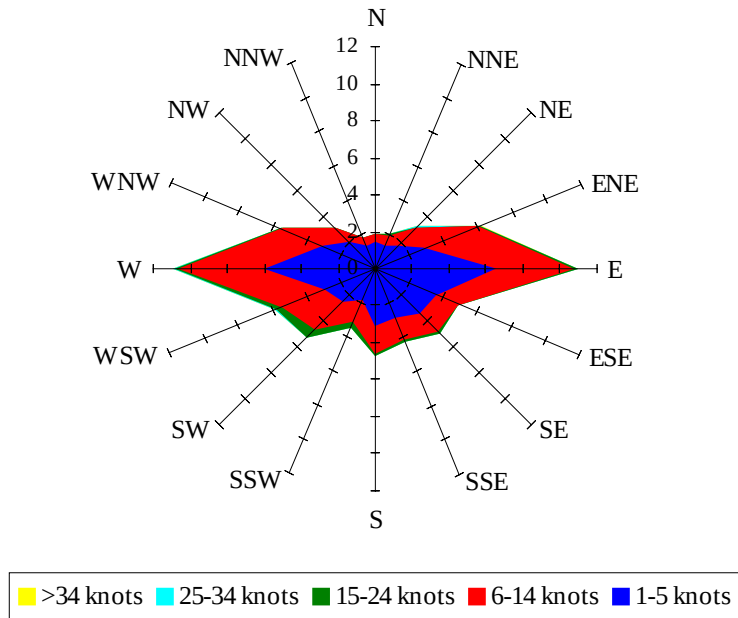
Labels of Percent Frequency on North Axis



Percent Calm = 20.54

Wind Summary - June, July, and August

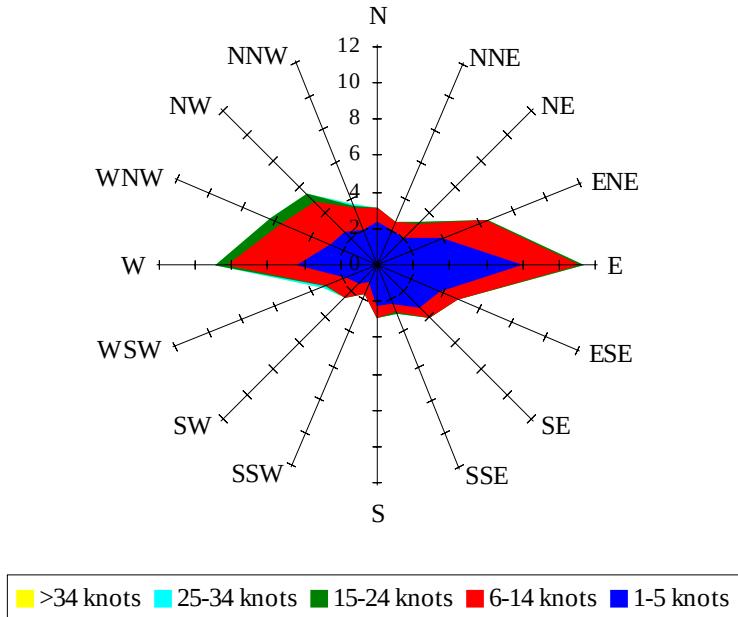
Labels of Percent Frequency on North Axis



Percent Calm = 22.17

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 28.13